

## Quality commitment



Prysmian has a built in multi-step quality assurance program, covering the production process from cable design and raw material purchasing, to final inspection and testing documentation.

The quality system of Prysmian has been assessed and approved and is audited regularly by Lloyd's Register of Quality Assurance to the ISO 9001 and ISO 14001 Quality System Standards.

The ISO 14001 is the environment quality standard.



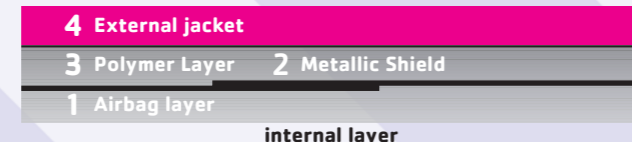
## Jointing accessories and services

The AIRGUARD cable is fully compatible with traditional joints and terminations. The full range of terminations is available.

Prysmian is one of the largest manufacturers of power cable accessories for the electricity supply and electrical contracting industries. Manufactured and supplied under a quality assurance system certified to BS EN ISO 9001, our products are designed to meet stringent national and international standards.



## AIRGUARD™ design



- AIR BAG™ Layer** - The Prysmian patented AIR BAG™ system provides excellent protection against impact and mechanical abuse during the lifetime of the cable. It also provides increased tolerance to sidewall bearing pressures and static loads, without affecting the thermal or flexing characteristics of the cable.
- The metallic shield is applied to the cable longitudinally. The polymer coating on the shield seals the overlap.
- An extruded layer is bonded to the metallic shield and improves mechanical strength. This material in combination with the metallic shield is highly resistant to organic chemicals such as hydrocarbons and solvents. In addition it provides resistance to termites and rodents.
- The outer layer is offered in a choice of Prysmian Afumex™ LSOH or PVC. Both the Afumex™ and PVC offer flame retardancy whilst Afumex™ also offers the additional benefit of minimal release of smoke and toxic fumes.

## Main features

### CHEMICAL RESISTANCE

The hydrocarbon blocking layer combined with the metallic shield prevents attack of moisture and liquids such as hydrocarbons and solvents, acids and bases

### MECHANICAL PROTECTION

The AIR BAG™ layer has proven in millions of meters of installed cable to absorb the kinetic energy of a physical shock. In this way less residual energy remains to damage the cores of the cable. Rigid metal armouring does not behave the same way during physical stress, part of the energy of the shock is transmitted to the cable core and leaves the armour permanently deformed.

### ELECTRICAL PROPERTIES

The metallic layer provides electromagnetic shielding and a current carrying path for harmonics found with variable frequency drive motors.



## Benefits

Property	Difference with CCW	Benefits				
	CCW: Corrugated and Continuously Welded armour	Lower Freight Cost	Easier Handling	Easier Installation	Fewer Joints	Increased Life
Diameter	Average diameter 10% smaller than CCW	█	█	█	█	█
Weight	Average weight 5-10% lighter than CCW*	█	█	█	█	█
Impact Performance	5 x the impact performance of CCW	█	█	█	█	█
Bending Radius	Smaller bending radius than CCW	█	█	█	█	█
Jointing	Easier jointing than CCW	█	█	█	█	█
Side Wall Pressures	Withstand higher lateral forces than CCW	█	█	█	█	█

\* Compared to yarn filled AIRGUARD™ cables



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# Airguard Cable System



## About us

Prysmian Cables & Systems is a world-class multinational company. Founded in 1872 as "Ditta Pirelli & C.", it has achieved a leading position for more than a century of operations in its two key international markets - "Energy Cables & Systems" and "Telecom Cables & Systems".

Prysmian Cables and Systems is the world's largest manufacturer of power and telecommunications cables, with 52 manufacturing facilities in 21 countries in five continents and a market share in excess of 10%.

Prysmian Energy Cables and Systems is a global solutions provider, offering a wide range of integrated solutions, such as cable systems, system design and engineering, project management, installation and post-sale services.

Prysmian Energy Cables and Systems concentrates on continuous product innovation and on achieving a competitive edge by focusing on research and development. This is done through Prysmian's own R&D centres and by co-operating with universities, scientific institutions and above all, our customers. Prysmian's world-wide organisation makes and delivers advanced technological solutions to customers anywhere in the world.

Prysmian's TECHNERGY integrated cabling solutions™ is one of the world's most comprehensive and technologically advanced answers to industry, infrastructure, contractors and OEM's specific requirements.

TECHNERGY integrated cabling solutions™ are designed and structured into twelve different product lines. Each of these offer tailored designs and added value solutions to the most diverse functional and environmental requirements in the following fields:

- > Trains
- > Marine
- > Oil & Gas
- > Plant & Petrochem
- > Mining & Tunnelling
- > Defence
- > Cranes & Mobile Equipments
- > Electro-Mechanical
- > Data & Communication
- > Transportation Infrastructures
- > Building & Civil Engineering
- > Power Plants

To find out more about the TECHNERGY integrated cabling solutions™, Prysmian Cables and Systems invites you to visit the web site: [www.prysmian.com](http://www.prysmian.com)

## Application

In the oil & gas industry and in most industrial environments, a major problem is the attack of aggressive chemicals such as hydrocarbons, solvents, acids, bases and moisture. Penetration of these elements into the core of a cable compromises its overall lifetime performance, by reducing its dielectric strength. Traditional methods to overcome this problem have used a continuously corrugated and welded metallic layer as part of the cable construction. The disadvantages of this approach include an increase in cable weight, diameter and difficulty in cable handling.

Prysmian has combined the patented technologies of AIR BAG™ and DRYLAM™ to provide the same protection from fluid ingress, whilst enhancing the mechanical properties of the cable. This leads to improved cable performance and increased cable reliability.

AIRGUARD™ cables are recommended as an effective alternative to a wire in conduit system and armoured cables. AIRGUARD™ cables are designed to be used on horizontal and vertical feeders, branch circuits, and general industrial power applications. AIRGUARD™ power cables are UL approved for installation in tray, raceway, aerial and direct buried environments.

### PRODUCT RANGE

MV Cables
LV Cables
Instrumentation and Control Cables

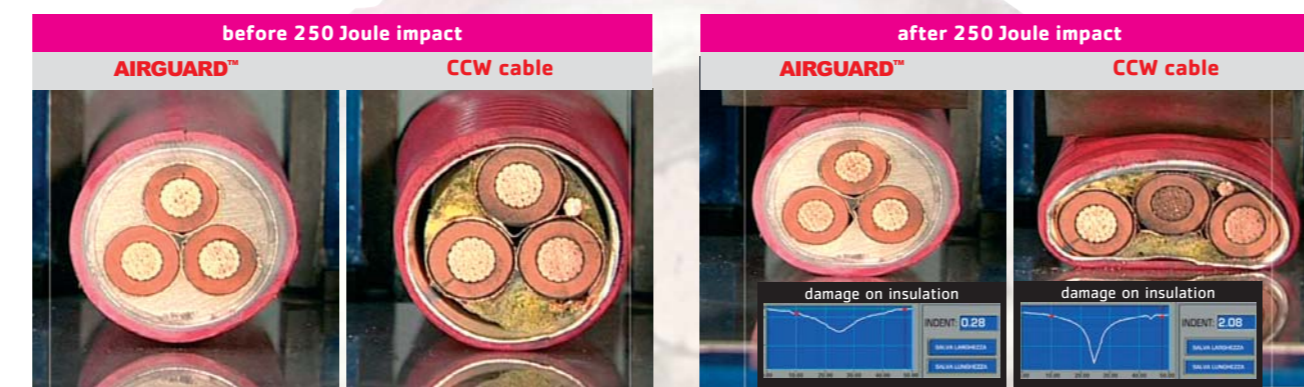


## Impact tests

Impact tests have been run on both types of cables in order to evaluate the mechanical protection offered by the AIRGUARD™ cable design and the CCW cable. This simulates potential destructive forces that can be encountered by the cables during installation and cable lifetime. After testing, the damage to the cores has been determined by laser measurement.



Laser measuring instrument



### RESULT

Cable type	Mass (N)	Cable diameter (mm)	Height (mm)	Energy (Joule)	Damage on insulation (mm)
AIRGUARD	550	80	454	250	0.28
CCW cable	550	86	90	50	0.30
			181	100	0.90
			454	250	2.08

IMPACT TESTER SHAPE: wedge shape 90°/2 mm radius on sharp edge - single impact

\* Airguard shows the same level of damage at 5 times the impact energy

### SIDE WALL BEARING PRESSURE TEST

Direct comparisons of AIRGUARD™ and CCW cables at Prysmian's SWBP testing facilities show that airguard cables are able to withstand higher lateral forces than the equivalent CCW cables. This is used to simulate the extreme forces encountered during installation.



### APPLICABLE STANDARDS AND APPROVALS

AIRGUARD™ performance has been evaluated against a wide range of industrial standards, including:

- > Oil resistance (UL Oil I & II)
  - > Fuel resistance
  - > Fire propagation (IEC 60332.3C, IEEC 383, IEEE 1202)
  - > Smoke test
  - > Cold impact -40 °C
  - > Cold bend -40 °C
- In Addition AIRGUARD™ cables are approved according to the following standards:

- > UL 1072
- > UL 44
- > Marine Shipboard
- > ABS
- > Coast guard
- > CT Rating
- > ICEA T-29-520 at 210,000BTU/hr

